subroutine call, for each first route step that has a second route executed on it's behalf, the first route does not advance to the next first route step until the second route completes and returns to the first route step. With Du, the sequence of second routes executed on behalf of the first route steps are determined by the sequence of first route steps. However, the second routes are not connected in this sequence to be an independent route nor do these second routes execute independently and asynchronously.

With Du, when the second routes manufacture each item, the first route must execute for each unit manufactured since the connection between each second route is through the first route. That is, when 100 units are manufactured, the first route must execute 100 times so that the second route will execute 100 times. With Du, if the first route does not execute, the second route cannot execute. The first route and second route are tightly intertwined and not independent.

Du is only applicable to the present invention in a degenerate case where the first route has only one step that invokes the entire second route. The claims are crafted to avoid this degenerate case. The claims for the present invention provide for a first route with a first step and a second step where each step has an associated route segment and the route segments are connected to form the second route.

Bottom line: Du does not connect the associated second workflow route segments to form an independent route for the second workflow.

Facts that Counter the Examiner's Comments.

1) Claim 21 of the present invention includes:

providing a first object step with an associated first route segment, a sequence of steps to be connected to other route segments;

providing a second object step with an associated second route segment, a sequence of steps to be connected to other route segments;

forming a first route from the first object route by connecting the route segments associated with each object step, including the first route segment and second route segment, in the sequence of the object steps of the first object route where the first route is separate and not connected to the first object route;

Du does not teach or suggest the present invention claims where a program associates each step in the first route with a route segment for a second route and connecting the second route segments in the sequence of first route steps to generate a second route that independently executes in the second workflow.

Kim Figures 11-13 illustrate nested "calls" to workflow segments and DOES NOT illustrate connecting route segments to form an independent route as claimed for the present invention. Kim Figure 11 illustrates Process 1 with a step called Sub Process 2 that invokes the route Process 2 with a step called Sub Process 3 that invokes Process 3. Kim does not illustrate a first object route step with associated first route segment and second object step with associated second segment and connect the first route segment and second route segment in the sequence of the first object route step and second object route step. Kim illustrates two route segments but not related to two object route steps in Process 1 nor are these connected in the sequence of the steps in Process 1. These two segments are connected to Process 1 like a sub-routine call where in Figure 11 the sub-processes Process 2 and Process 3 must complete before Process 1 completes Sub Process 2. In Kim Figure 12, Process 2 must complete before Process 1 completes Sub Process 2. In Kim Figure 13, Process 2 is invoked by the step Sub Process 2 but Process 2 just goes off on its own and not connected to another route segment. Kim DOES NOT teach the steps the independent claims of the present invention.

[0006] describes two independent routes of the two coordinated workflows and illustrated in Figures 1B and 1C of the present invention.

10/036,200   Object Based Workflow Route   N. K. Ouchi   8/10/2009   Page 2 of 11

Du Figure 7 represents ONE route. The examples cited by the Examiner are <u>paths</u> through this ONE route. Each of these paths is NOT a route and cannot be used to illustrate functions of a second route. In fact the Examiner's example generates a route for the first workflow and not the second workflow.

first workflow
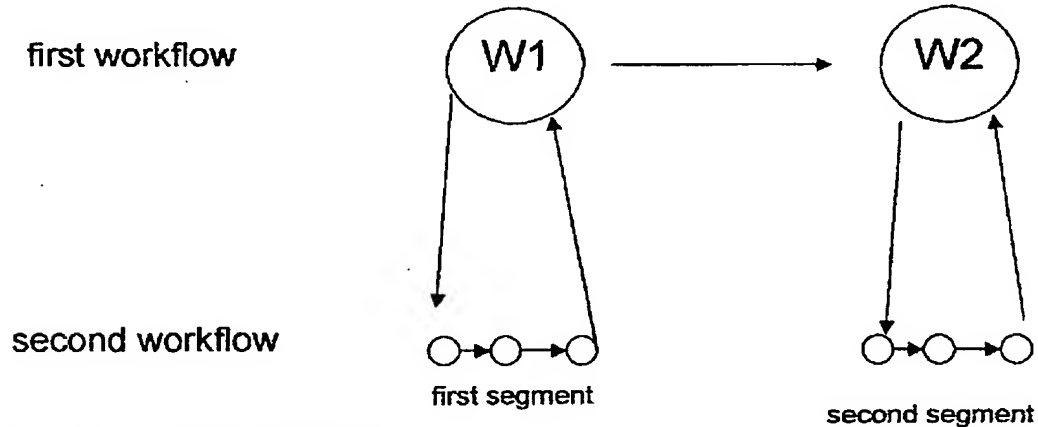
second workflow

first segment

second segment

Figure 1 Du – previous submission

Figure 2 of the previous submission illustrates the difference between Du in Figure 1 of the previous submission where the second workflow segments are NOT connected while in the present invention in Figure 2, the segments are connected to form and independent route and executes independent of the first workflow.

The line from W1 to the beginning of the first segment is to illustrate that the two routes are coordinated but not connected. The figure has been modified to dotted lines to signify coordination rather than be misunderstood to be "connected". The first workflow executes ONCE while the second workflow executes once for each unit built, that is, the second workflow executes 100 times for 100 units. The 100 execution of the second workflow is asynchronous and independent of the single execution of the first workflow and only coordinated where after 100 executions, the second workflow signals to the first workflow that the 100 units have been completed.

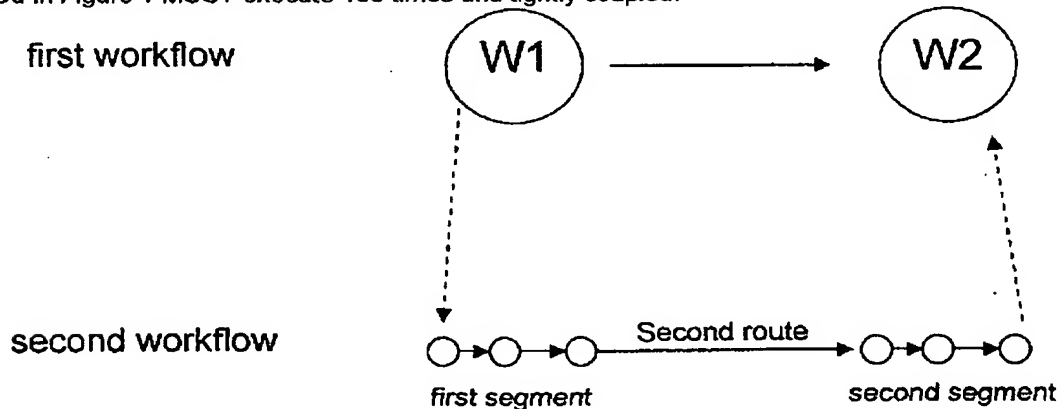Du in Figure 1 MUST execute 100 times and tightly coupled.

first workflow

second workflow

Second route

first segment

second segment

Figure 2 Present Invention

2) Claim 21 includes:

10/036,200   Object Based Workflow Route   N. K. Ouchi   8/10/2009   Page 3 of 11

starting the first workflow to execute the first object route, which signals the second workflow to start the first route; and, the second workflow completes the first route and signals the first workflow to complete the first object route

The claims describes the coordination between the first object route and first route where starting the object route starts the route and the completion of the route signals to complete the object route. The dotted lines in Figure 2 illustrates this limitation.

<u>35 U.S.C. 112 Rejection</u>

3) "starting the first workflow to execute the first object route, which signals the second workflow to start the first route; and, the second workflow completes the first route and signals the first workflow to complete the first object route."

The prior art provides for parallel ERP routes and shopfloor routes [0004]-[0010] that provide synchronization for the start and the completion of the two routes. "There are two workflow systems each with a route needed to control and track the manufacture items in a shop floor process [0025]." "Figure 1C illustrates a portion of the shop floor route for the ERP route illustrated in Figure 1B where each step in the ERP route corresponds to one or more steps in the shop floor route. [0006]"

"When the ERP route is <u>instantiated, started</u>, in the ERP system to manufacture items, the corresponding shop floor route is instantiated in the shop floor workflow system to control and track the manufacture of the items. [0032]" describes when the ERP route is started, the shop floor workflow started ("instantiated"). "The shop floor steps in each route segment within an object may be adapted to signal to the ERP system when an item has entered or exited the object and the shop floor system can track the number of items in each object and report the count to the ERP system. [0032]" where the last item to be manufactured exits the last step in the route and can signal the completion to the ERP route.

The prior art routes are manually generated [0010]. The specification of the present invention was focused on the teaching the program generation of the shopfloor route from the ERP route or ERP route from the shopfloor route rather on the start and completion synchronization of the prior art. The unique synchronization of among the steps of the two routes such as reporting the count of objects are disclosed in detail since these are not in the prior art.

4) "Figure 2C illustrates the object associated with ERP Step B. ERP Step B1 is very similar to the workflow system object ERP Step A1 except the steps are related to assembling configuration B1. The ERP Step B1 object also has an output link for a feedback path to a repair step in another object. Figure 2D illustrates the object associated with the ERP Test step. The object is a decision step, Test C1 where a successful test moves the item to the next object and a failure moves the item to a previous step usually Repair. [0023]"

"Note that the <u>ERP route is a linear sequence of steps while the shop floor workflow route has repair and test feedback loops</u> that reflect the real paths that the item can take when manufactured. The ERP system can track the progress of each item as assembled using the ERP steps objects. The ERP cannot "see" the steps within the objects but the shop floor workflow system can send information to the ERP workflow system so that the ERP system can determine that a specific item is at a ERP step, within an object or the number of items at that object, etc. For the purposes of the ERP, the route is the sequence of steps (that map to objects). For the shop floor workflow system, the route is the detailed network of the connected route segments with steps within the objects. [0023]" The feedback loops and links are not in the ERP route.

The ERP Step B1 and ERP Test C1 in Figures 2C and 2D do not have feedback "connections", links, while the shopfloor route segment provides feedback links. Claims 22, 30, and 33 are amended to use "link" rather than "connection". Note: The Examiner cited claims 29 and 32 but the inventor believes issue is with claims 30 and 33.

<u>35 U.S.C. 101 Rejection</u>

10/036,200   Object Based Workflow Route   N. K. Ouchi   8/10/2009   Page 4 of 11

5) Claims 21 and 29 are amended with language that the method is implemented as a program that generates the route with the object route as an input. The object route for an object work flow system is used to generate a route for a second workflow system. The specification Description of a Preferred Embodiment [0030]-[0033] describes programming tools, data bases and data base structures for the mapping of object route steps to route sequences of steps. The implementation is described as a program since except for simple, trivial cases, the data structures and data manipulations are complex and tedious and not reasonable to expect to be done by a human.

35 U.S.C. 103 Rejection

6) Please re-read the previous correspondence. Du Figure 7 illustrates <u>one first route</u> that directs <u>one first workflow</u>. Figure 7 is ONE and only ONE route. The route segments invoked by steps W1, W2, etc. as taught by Du are not visible in Figure 7 (col 11 line 51 to col 12 line 5) which illustrates the SONET Configuration Management Prototype. The work nodes W1, W2, etc. invoke processes in the LRM which are workflows for specific processes to accomplish the work node function. These are like sub-routine calls where the first route step does not advance to the next step until the remote function is completed.

The Examiner cites as a counter example:

a) providing a first object step {W1} with an associated first route segment {forward arc connected to W2} a sequence of steps to be connected to other route segments;

First, the forward arc to W2 is part of the object route. Second, this is not a route segment since it lacks a step that has links to connect to other route segments but is in fact already connected. In Du, the route segment is in the LRM and called by W1. See Figure 7 (col 11 line 51 to col 12 line 5). For Du and Kim, the route segments are like sub-routine calls. In Du and Kim the route segments are not connected.

b) providing a second object step {W2} with an associated second route segment {the arc between W1 and W2 and the forward arc between W2 and R3} a sequence of steps to be connected to other route segments;

As with the first object step, the second route segment is part of the object route and not a route segment and already connected.

c) providing a first workflow means directed by an object route {W1, W2, W5, W6, W7, W8}, a sequence of object steps, with means to signal a second workflow means to start a route;

The object route is illustrated by Figure 7, the complete route and not just a selected set of W steps but also the R steps and the interconnecting arcs. The object route executes in HP OpenPM. Each W node can initiate an associated route in the LRM but must wait until the LRM returns with a completion of the associated route. (col 8 lines 35-40)

d) means to signal the first workflow means a competition of a route

What happened to:

<u>providing the second workflow means that is separate, independent, and operating asynchronous from the first workflow means, directed by a route, a sequence of steps?</u>

In Du, the LRM is the second workflow means. The second workflow means is a critical element of the present invention. The LRM signals the competition of the subroutine workflow.

Later in the reply, the Examiner states:

Du et al does not explicitly teach the step of (d) defining a second workflow means, separate, independent, and operating asynchronously from the first workflow means directed by a route, a sequence of steps.

In fact, Du nor Kim teach, suggest, infer, or would lead one of ordinary skill to implement the second workflow as defined

10/036,200   Object Based Workflow Route   N. K. Ouchi   8/10/2009   Page 5 of 11

e) *defining a first object route {W1, W2, W5, W6, W7, W8},a sequence of object steps including the first object step and second object step, providing conditional branches, parallel paths, and loops such that all the connected object steps are included;*

The object route is illustrated by Figure 7, all of Figure 7, which includes all connected object steps and not selected steps or arcs. In Du, this is what executes in the HP OpenPM.

f) *forming a first route {W1, W2, R3, W5, R5, W6, R6, W7, R7, W8, R8} from the first object route {W1, W2, W5, W6, W7, W8} by connecting the route segments associated with each object step {forward arcs and reset arcs between nodes}, including the first route segment and second route segment {W1, W2} in the sequence of the object steps of the first object route;*

? I cannot make any sense of this. The first route is formed by connecting the route segments associated with each object step. The Examiner has not associated route segments for the second workflow means. The association made by the Examiner are not route segments but the arcs in the object route. Nothing in Du, Kim, the specification or claims provides for this. The claims are not for creating an object route from an object route to execute in the object workflow but creating an independent route for execution in an independent second workflow.

The whole objective of the present invention is the creation of two cooperative routes that execute in two separate, independent, asynchronous workflow systems to accomplish a common goal.

g) *providing the first object route to direct the first workflow means;*

OK. The route of Figure 7 Is started in the object workflow, HP OpenPM.

h) *providing the first route to direct the second workflow means, starting the first workflow to execute the first object route, which signals the second workflow to start the first route, the second workflow competes the first route, and the first workflow completes the first object route.*

In the Examiner's example, there is no second workflow. In Du, the second workflow is the LRM.

The Examiner states:

As per (f) and (h) Du et al does not explicitly teach separate workflow routes in which routes are not connected or reliant on one another.

In fact, Du nor Kim teach, suggest, infer, or would lead one of ordinary skill to implement separate workflow routes in which routes are not connected of reliant on one another.

Kim illustrates asynchronous execution of a sub-process in Figure 13. The sub-process is initiated by a call from a step in the object route but the sub-process never returns to signal competition and the step in the object route moves to the next step in the route independent of the sub-process. This is not claimed in the present invention.

Summary of the Independent claims:

From the Examiner:

Du et al does not explicitly teach the step of defining a second workflow means, separate, independent, and operating asynchronously from the first workflow means directed by a route, a sequence of steps.

Du et al does not explicitly teach separate workflow routes in which routes are not connected or reliant on one another

forming a first route {W1, W2, R3, W5, R5, W6, R6, W7, R7, W8, R8} from the first object route {W1, W2, W5, W6, W7, W8} by connecting the route segments associated with each object step {forward arcs and reset arcs between nodes}, including the first route segment and second route segment {W1, W2} in the sequence of the object steps of the first object route;

This argument by the Examiner makes no sense since the objective is not forming another object route to execute in the object workflow but to form a route to execute in the second workflow means which is absent from his argument.

10/036,200   Object Based Workflow Route   N. K. Ouchi   8/10/2000   Page 6 of 11

The objective of the present invention is to provide a second workflow means directed by a route, separate, independent, and operating asynchronously for a first workflow means directed by an object route. The specification is replete with examples of the ERP workflow system and the shopfloor workflow system.

Neither Du nor Kim teach forming a route for execution in a second workflow means from an object route for execution in a separate, independent, asynchronous first workflow means by associating each object step in the object route with a route segment and connecting the associated route segments in the sequence of the object steps where there may be connections not in the object route, including feedback connections.

Neither Du nor Kim teach starting the object route in the first workflow and the route in the second workflow and completing the route in the second workflow and the object route in the first workflow.

Neither Du nor Kim teach the synchronization of information such as number of items completing a step in the route with a step in the object route.

The present invention is significantly different from Du or Kim and serves a unique and useful purpose as described in the disclosure.

The Inventor appreciates the Examiner's through and thoughtful examination and responses.

Very minor amendments were made to the claims to clarify 101 and 112 issues. The text for the cancelled claim is deleted.
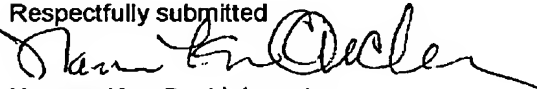
Please allow the amended claims.

The claims are grouped: 21-24, 26-28, 29-31, 40 and 32-39 where claims 21, 29, and 32 are independent claims.

Please call the Inventor after reading this response so that he may clarify any issues specifically in the discussion of Du and the connection of route segments.

408-757-5862 or e-mail at Ken.Ouchi@Avidtecs.com

Respectfully submitted

Norman Ken Ouchi, Inventor

10/036,200   Object Based Workflow Route   N. K. Ouchi   8/10/2009   Page 7 of 11